



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Indra LAKSONO et al.

Title: METHOD AND SYSTEM FOR RATE CONTROL DURING VIDEO
TRANSCODING

Application No.: 09/990,737

Filed: 11/21/2001

Examiner: LEE, Richard J.

Group Art Unit: 2613

Atty. Docket No.: VIXS.0100130
(1459-VIXS013)

Mail Stop AMENDMENT
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PO Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT TRANSMITTAL

Dear Sir:

Pursuant to 37 C.F.R. § 1.56, § 1.97 and § 1.98, the undersigned brings the patents, publications, applications or other information identified in the attached:

- ☒ Form(s) PTO/SB/08A and/or PTO/SB/08B or PTO/1449
☒ Fee Transmittal

to the Examiner's attention in the above-identified application. Citation of such information shall not be construed as:

1. an admission that the information necessarily is, or corresponds to, prior art with respect to the instant invention;
2. a representation that a search has been made, other than as described below; or
3. an admission that the information cited herein is, or is considered to be, material to patentability as defined in § 1.56(b).

For each item of information listed that is not in the English language, the undersigned has provided a concise explanation of the relevance, such as through (i) an English language abstract, (ii) an English language equivalent application, (iii) reference to discussion in the application, or (iv) if cited in a search report or other action by a foreign patent office in a

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as either First Class Mail or Express Mail, in an envelope addressed to the Commissioner for Patents on 8/19/05.

Judy Carey
Typed or Printed Name

[Signature]
Signature

counterpart foreign application, an English language version of the search report or action that indicates the degree of relevance found by the foreign office.

STATEMENT UNDER 37 C.F.R. § 1.704(d)

If the above-identified application is an original application filed on or after May 29, 2000:

- ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement.

FEES DUE


This Information Disclosure Statement is being filed:

- ☐ within three months of the filing date of a national application or within three months of entry of the national stage as set forth in § 1.491 in an international application. Therefore, no fee is required.
- ☐ before the mailing date of a first Office action on the merits or before the mailing date of a first Office action after the filing of a request for continued examination under § 1.114. Therefore, no fee is believed required.
- ☐ during the period specified in § 1.97(c). Each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application not more than three months prior to the filing of this Information Disclosure Statement.
- ☒ during the period specified in § 1.97(c). Accordingly, the fee set forth in § 1.17(p) is required and provided as shown on the attached Fee Transmittal.
- ☐ during the period specified in § 1.97(d). Accordingly, the fee set forth in § 1.17(p) is required and provided as shown on the attached Fee Transmittal. Additionally, each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application not more than three months prior to the filing of this Information Disclosure Statement.

Should any PTO fees be necessary for entry of this Information Disclosure Statement, the undersigned hereby authorizes the Commissioner to charge Deposit Account 50-1835.

Respectfully submitted,

8-17-05
Date


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PTO/SB/17 (12-04)
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FEE TRANSMITTAL For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 180.00

Complete if Known

Application Number	09/990,737
Filing Date	11/21/2001
First Named Inventor	Indra LAKSONO
Examiner Name	LEE, Richard J.
Art Unit	2613
Attorney Docket No.	VIXS.0100130 (1459-VIXS013)

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify):
☒ Deposit Account Deposit Account Number: 50-1835 Deposit Account Name: VIXS Systems, Inc.

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

<u>Total Claims</u>	<u>Extra Claims</u>	<u>Fee (\$)</u>	<u>Fee Paid (\$)</u>	<u>Multiple Dependent Claims</u>	<u>Fee (\$)</u>	<u>Fee Paid (\$)</u>
- 20 or HP =	x	=				
HP = highest number of total claims paid for, if greater than 20						
<u>Indep. Claims</u>	<u>Extra Claims</u>	<u>Fee (\$)</u>	<u>Fee Paid (\$)</u>			
- 3 or HP =	x	=				
HP = highest number of independent claims paid for, if greater than 3						

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

<u>Total Sheets</u>	<u>Extra Sheets</u>	<u>Number of each additional 50 or fraction thereof</u>	<u>Fee (\$)</u>	<u>Fee Paid (\$)</u>
- 100 =	/ 50 =	(round up to a whole number) x	=	

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other: IDS Transmission

180.00

SUBMITTED BY

Signature		Registration No. 39,263 (Attorney/Agent)	Telephone 512-327-5515
Name (Print/Type)	J. Gustav Larson		Date 8-18-05

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PTO/SB/08A (08-03)

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1

of 8

Complete if Known

Application Number	09/990,737
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First Named Inventor	Indra LAKSONO
Art Unit	2613
Examiner Name	LEE, Richard J.
Attorney Docket Number	VIXS.0100130 (1459-VIXS013)

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	AA	US- 5,027,203	06-25-1991	Samad, et al.	
	AB	US- 5,115,812	05-26-1992	Sano, et al.	
	AC	US- 5,475,434	12-12-1995	Kim	
	AD	US- 5,602,589	02-11-1997	Vishwanath, et al.	
	AE	US- 5,635,985	06-03-1997	Boyce, et al.	
	AF	US- 5,644,361	07-01-1997	Ran, et al.	
	AG	US- 5,652,749	07-29-1997	Davenport, et al.	
	AH	US- 5,732,391	03-24-1998	Fiocca	
	AI	US- 5,737,020	04-07-1998	Hall, et al.	
	AJ	US- 5,740,028	04-14-1998	Sugiyama, et al.	
	AK	US- 5,940,130	08-17-1999	Nilsson, et al.	
	AL	US- 5,996,029	11-30-1999	Sugiyama, et al.	
	AM	US- 6,005,623	12-21-1999	Takahashi, et al.	
	AN	US- 6,005,624	12-21-1999	Vainsencher	
	AO	US- 6,014,694	01-11-2000	Aharoni, et al.	
	AP	US- 6,040,863	03-21-2000	Kato	
	AQ	US- 6,081,295	06-27-2000	Adolph, et al.	
	AR	US- 6,141,693	10-31-2000	Perlman, et al.	
	AS	US- 6,144,402	11-07-2000	Norsworthy, et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	AT	EP 0661826 A2	07-05-1995	IBM		
	AU	EP 0739138 A2	10-23-1996	Kalmanek, et al.		
	AV	EP 0805599 A2	11-05-1997	Oki Electric Industry		
	AW	EP 0855805 A2	07-29-1998	Sharp KK		
	AX	EP 0896300 B1	02-10-1999	Matsushita Electric		
	AY	EP 0901285 A1	02-10-1999	Yamauchi		

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Considered

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Complete if KnownSheet **2**of **8**

Application Number	06/990,737
Filing Date	11/21/2001
First Named Inventor	Indra LAKSONO
Art Unit	2613
Examiner Name	LEE, Richard J.
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		Number-Kind Code ² (if known)			
	AZ	US- 6,167,084	12-26-2000	Wang, et al.	
	BA	US- 6,182,203	01-30-2001	Simar, Jr., et al.	
	BB	US- 6,215,821	04-10-2001	Chen	
	BC	US- 6,219,358	04-17-2001	Pinder, et al.	
	BD	US- 6,222,886 B1	04-24-2001	Yogeshwar	
	BE	US- 6,236,683	05-22-2001	Mougeat, et al.	
	BF	US- 6,263,022	07-17-2001	Chen, et al.	
	BG	US- 6,300,973	10-09-2001	Feder, et al.	
	BH	US- 6,307,939 B1	10-23-2001	Vigarie	
	BI	US- 6,314,138	11-06-2001	Lemaguet	
	BJ	US- 6,323,904	11-27-2001	Knee	
	BK	US- 6,366,614	04-02-2002	Pian, et al.	
	BL	US- 6,385,248	05-07-2002	Pearlstein, et al.	
	BM	US- 6,480,541	11-12-2002	Girod, et al.	
	BN	US- 6,526,099	02-25-2003	Chistopoulos, et al.	
	BO	US- 6,259,741	07-10-2001	Chen, et al.	
	BP	US- 6,584,509	06-24-2003	Putzolu	
	BQ	US- 6,724,726	04-20-2004	Coudreuse	
	BR	US- 6,748,020	06-08-2004	Eifrig, et al.	

FOREIGN PATENT DOCUMENTS

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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	BS	EP 0955607 A2	11-10-1999	Sarnoff Corp.		
	BT	EP 1032214 A2	08-30-2000	Matsushita Electric		
	BU	WO 01/95633 A2	12-13-2001	Gen Instrument Group		
	BV	WO 02/080518 A2	10-10-2002	Laksono		
	BW	JP 07-210670 A	08-11-1995	Fuji Xerox Ltd.		
	BX	EP 1087625 A2	03-28-2001	Sostawa et al.		

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Sheet 3

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		Number-Kind Code ² (if known)			
	BY	US- 6,438,168	08-20-2002	Arye	
	BZ	US- 2001/0026591 A1	10-04-2001	Keren, et al.	
	CA	US- 2002/110193 A1	08-15-2002	Kyoon, et al.	
	CB	US- 2002/138259 A1	09-26-2002	Kawahara	
	CC	US- 2002/196851 A1	12-26-2002	Arnaud	
	CD	US- 2002/106022 A1	08-08-2002	Takahashi, et al.	
	CE	US- 2003/0152148 A1	08-14-2003	Laksono	
	CF	US- 4,866,395	09-12-1989	Hosteller	
	CG	US- 6,549,561	04-15-2003	Crawford	
	CH	US- 5,093,847	03-03-1992	Cheng	
	CI	US- 5,253,056	10-12-1993	Puri	
	CJ	US- 6,714,202	03-03-2004	Dorrell	
	CK	US- 5,844,545	12-01-1992	Suzuki, et al.	
	CL	US- 5,563,950	10-08-1996	Easter, et al.	
	CM	US- 5,850,443	12-15-1998	Van Oorschot, et al.	
	CN	US- 2002/0145931 A1	10-10-2002	Pitts	
	CO	US- 2003/0093661 A1	05-15-2003	Loh, et al.	
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

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Sheet

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8

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	CP	YU, Donghoom, et al., "Fast Motion Estimation for Shape Coding in MPEG-4," IEEE Transactions on Circuits and Systems for Video Technology, Vol. 13, No. 4, 2003 IEEE, April 2003, pp. 358-363	
	CQ	PYUN, Jae-Young, "QoS Provisioning for Video Streaming Over IEEE 802.11 Wireless LAN," (abridged) IEEE Conferences in Consumer Electronics, June 16, 2003, EE Times, Seoul, Korea, < http://eetimes.com/printableArticle?doc_id=OEG2003061S0070 > retrieved July 8, 2003	
	CR	YOUN, Jeongnam et al., "Video Transcoding For Multiple Clients," Proceedings of the SPIE, Bellingham, VA, vol. 4067, XP008012075, pp. 76-85, University of Washington, Seattle, WA	
	CS	LENGWEHASATIT, Krisda et al., "Computationally Scalable Partial Distance Based Fast Search Motion Estimation," Packet Video Corp., San Diego, California	
	CT	TAKAHASHI, Kuniaki, et al., "Motion Vector Synthesis Algorithm for MPEG2-to-MPEG4 Transcoder," Proceedings of the SPIE, Bellingham, VA, vol. 4310, Sony Corporation, XP008000078, pp. 387-882, 2001 SPIE	
	CU	SOARES, Luis Ducla, et al., "Influence of Encoder Parameters on the Decoded Video Quality for MPEG-4 Over W-CDMA Mobile Networks," NTT DoCoMo, Inc.	
	CV	AGGARWAL, Manoj et al., "Efficient Huffman Decoding," 2000 IEEE, 0-7803-6297-7, pp. 936-939, University of Illinois at Urbana-Champaign, Urbana, IL	
	CW	SHERWOOD, P. Greg et al., "Efficient Image and Channel Coding for Wireless Packet Networks," University of California, La Jolla, California	
	CX	ASSUNCAO, Pedro et al., "Rate Reduction Techniques for MPEG-2 Video Bit Streams," SPIE, Vol. 2952, April 1996, pp. 450-459, University of Essex, Colchester, England	
	CY	YIN, Peng et al., "Video Transcoding by Reducing Spatial Resolution," Princeton University, 2000, Princeton, New Jersey	

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Considered

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¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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	CZ	SHANABLEH, Tamer et al., "Heterogeneous Video Transcoding to Lower Spatio-Temporal Resolutions and Difference Encoding Formats," IEEE Transactions on Multimedia, Vol. 2, No. 2, June 2000, pp. 101-110, Engineering and Physical Sciences Research Council, Colchester, U.K.	
	DA	WIEGAND, Thomas et al., "Long-Term Memory Motion-Compensated Prediction for Robust Video Transmission," in Proc. ICIP 2000, University of Erlangen-Buremberg, Erlangen, Germany	
	DB	FAN, Zhigang et al. "Maximum Likelihood Estimation of JPEG Quantization Table in the Identification of Bitmap Compression History," Xerox Corporation, Webster, New York	
	DC	THOMAS, Shine M. et al., "An Efficient Implementation of MPEG-2 (BC1) Layer 1 & Layer 2 Stereo Encoder on Pentium-III Platform", pp. 1-10, Sasken Communication Technologies Limited, Bangalore, India,	
	DD	RAMANUJAN, Ranga S. et al., "Adaptive Streaming of MPEG Video Over IP Networks," 22nd IEEE Conference on Local Computer Networks (LCN '97), November 02-05, 1997, 1997 IEEE, pp. 398-409, Architecture Technology Corporation, Minneapolis, MN	
	DE	REJAIE, Reza et al., "Architectural Considerations for Playback of Quality Adaptive Video Over the Internet," XP002177090, 2000 IEEE pp. 204-209, AT&T Labs, Menlo Park, California	
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	DG	CHALIDABHONGSE, Junavit et al., "Fast Motion Vector Estimation Using Multiresolution-Spatio-Temporal Correlations," IEEE Transactions On Circuits and Systems For Video Technology, vol. 7, no. 3 June 1997, pp. 477-488	
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Application Number	09/990,737
Filing Date	11/21/2001
First Named Inventor	Indra LAKSONO
Art Unit	2613
Examiner Name	LEE, Richard J.
Attorney Docket Number	VIXS.0100130 (1459-VIXS013)

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	DJ	FUKUNAGA, Shigeru et al., "MPEG-4 Video Verification Model Version 16.0" International Organization for Standardization: Coding of Moving Pictures and Audio, Vol. N3312, March 2000, pp. 1-380, XP000861688,	
	DK	KRONER, Sabine et al., "Edge Preserving Noise Smoothing With An Optimized Cubic Filter," DEEI, University of Trieste, Trieste, Italy	
	DL	KIM, Jaemin et al., "Spatiotemporal Adaptive 3-D Kalman Filter for Video," pp. 1-12. Samsung Semiconductor, Inc. San Jose, California	
	DM	LIU, Julia J., "ECE497KJ Course Project: Applications of Wiener Filtering In Image and Video De-Noising," pp. 1-15, May 21, 1997	
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	DO	KOSSENTINI, Faouzi et al. "Predictive RD Optimized Motion Estimation for Very Low Bit-Rate Video Coding," 1997 IEEE, XP-000726013, pp. 1752-1963, September 1, 1996, 1997 International Conference on Image Processing, Vancouver, Canada	
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	DQ	BRANDENBURG, Karlheinz, "MP3 and AAC Explained," Proceedings of AES 17th International Conference, XP008004053, pp. 99-110, Erlangen, Germany	
	DR	PAINTER, Ted et al., "Perceptual Coding of Digital Audio," Proceedings of the IEEE, Vol. 88, No. 4, April 2000, pp. 451-513, XP001143231, ISSN: 0018-9219, Arizona State University, Tempe, AZ	
	DS	HASSANZADEGAN, Hooman et al., "A New Method for Clock Recovery in MPEG Decoders," pp. 1-8, Basamad Negar Company, Tehran, Iran	

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	DT	KAN, Kou-Sou et al., "Low-Complexity and Low-Delay Video Transcoding for Compressed MPEG-2 Bitstream," Natinal Central University, Chung-Li, Taiwan	
	DU	MITCHELL et al., "MPEG Video Compression Standard: 15.2 Encoder and Decoder Buffering," Chapman and Hall Digital Multimedia Standards Series, pp. 340-356, XP002115299, ISBN: 0-412-08771-5, Chapman and Hall, New York	
	DV	WHYBRAY, M.W. et al., "Video Coding - Techniques, Standards and Applications," BT Technol J. Vol. 14, No. 4, 4 October 1997, pp. 86-100, XP000722036	
	DW	"SHARP Product Information: VTST-Series NTSC/PAL Electronic Television Tuners," RF Components Group, Sharp Microelectronics of the America, 1997	
	DX	EDWARDS, Larry M., "Satisfying Your Need for Net Speed," San Diego Metropolitan, September 1999, <<www.sandiegometro.com/1999/sept/speed.html>>, retrieved on 07/19/2001	
	DY	OZ, Ran et al., "Unified Headend Technical Management of Digital Services," BigBend Networks, Inc.	
	DZ	MURIEL, Chris, "What is Digital Satellite Television?," What is Digital Television Rev. 3.0, April 21, 1999, SatCure, Sandbach, England, <<http://www.netcentral.co.uk/satcure/digifaq.htm>>, access on 04/20/2001	
	EA	"CONEXANT Products & Tech Info: Product Briefs: CX24108," 2000-2002 Conexant Systems, Inc. access on 04/20/2001	
	EB	"CONEXANT Products & Tech Info: Product Briefs: CX22702," 2000-2002 Conexant Systems, Inc. access on 04/20/2001	
	EC	"TDC: Components for Modems & Digital Infotainment: Direct Broadcast Satellite Chipset," 2001 Telecom Design Communications Ltd., U.K., <<http://www.tdc.co.uk/modmulti/settop/index.htm>>, access on 04/20/2001	

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	ED	"White Paper: Super G: Maximizing Wireless Performance," March 2004, Atheros Communications, Inc., pp. 1-20, Document No. 991-00006-001, Sunnyvale, California	
	EE	KWOK, Y.K. et al., "Efficient Multiple Access Control Using a Channel-Adaptive Protocol for a Wireless ATM-Based Multimedia Services Network," March 29, 2000, Computer Communications 24(2001) 970-983, University of Hong Kong, Hong Kong, PRC	
	EF	LIANG, Ying-Chang et al., "Joint Downlink Beamforming, Power Control, and Data Rate Allocation for DS-CDMA Mobile Radio with Multimedia Services," 2000 IEEE, pp. 1455-1457, Ceneter for Wireless Communication, Singapore	
	EG	RAZAVI, Behzad, "Challenges in Portable RF Transceiver Design," September 1996, 1996 IEEE, pp. 12-25, Circuits & Devices	
	EH	MANNION, Patrick, "IceFyre Device Cools 802.11a Power Consumption," September 24, 2001, Planet Analog, National Semiconductor, << http://www.planetanalog.com/story/OEG20010924S0079 >>, access on 11/05/2001	
	EI	"ICE Fyre Semiconductor: IceFyre 5-GHz OFDM Modem Solution," September 2001, pp. 1-6, ICEFYRE: Rethink Wireless, IceFyre Semiconductor, Inc.	
	EJ	POZAR, David M., "Theory and Design of Ferrimagnetic Components," 1990, pp. 529, Microwave Engineering, Addison-Wesley Publishing Company, Inc.	
	EK	"Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications: High-Speed Physical Layer in the 5 GHz Band," 1999 IEEE, pp. 1-83, Supplement to IEEE Standard fo rInformation Technology, IEEE Std 802.11a-1999, LAN/MAN Standards Committee	
	EL	CICIORA, Walter S., "Cable Television in the United States: An Overview," May 25, 1995, pp. 1-90, Cable Television Laboratories, Inc., Louisville, Colorado	

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